

What is claimed is:

1       1. An organic electroluminescence device comprising:  
2       an anode;  
3       an organic layer containing at least one organic light  
4       emitting layer;  
5       a cathode;  
6       a cap used to encapsulate device main components having said  
7       anode, said organic layer, and said cathode which are stacked on  
8       an insulating substrate; and  
9       wherein oxygen is contained in an interface between said  
10      organic layer and said cathode.

1       2. An organic electro luminescence device comprising:  
2       an anode;  
3       an organic layer containing at least one organic light  
4       emitting layer;  
5       a cathode;  
6       a cap used to encapsulate device main components having said  
7       anode, said organic layer, and said cathode which are stacked on  
8       an insulating substrate; and  
9       wherein said cathode has a first cathode and a second  
10      cathode and oxygen that is contained in an interface between said  
11      organic layer and said first cathode.

1       3. An organic electro luminescence device comprising:  
2       an anode;  
3       an organic layer containing at least one organic light  
4       emitting layer;

5           a cathode;

6           a cap used to encapsulate device main components having said  
7       anode, said organic layer, and said cathode which are stacked on  
8       an insulating substrate; and

9           wherein said cathode has a plurality of layers and an oxygen  
10      content in a first cathode contained in said plurality of layers  
11      being in contact with said organic layer is larger than that in  
12      any cathode formed on a second cathode and afterward being not  
13      in contact with said organic layer.

1           4.       The organic electro luminescence device according to  
2       Claim 1, wherein a film thickness of said cathode is 20 nanometers  
3       to 100 nanometers.

1           5.       An organic EL according to claim 2, wherein a film  
2       thickness of said first cathode is 20nm to 100nm.

1           6.       The organic EL device according to Claim 3, wherein  
2       a film thickness of said first cathode is 20nm to 100nm.

1           7.       A method for manufacturing an organic EL device for  
2       encapsulating device main components having an anode, an organic  
3       layer containing at least one organic light emitting layer and  
4       a cathode which are formed on an insulating substrate using a cap,  
5       wherein said insulating substrate on which said device main  
6       components are formed are put into a vacuum apparatus before  
7       encapsulation and oxygen is contained in an interface between said  
8       organic layer and said cathode in a reduced pressure atmosphere.

1        8.    A method for manufacturing an organic EL device for  
2 encapsulating device main components having an anode, an organic  
3 layer containing at least one organic light emitting layer and  
4 cathodes consisting of a plurality of layers which are formed on  
5 an insulating substrate using a cap, said method comprising;

6                a process of performing, after having formed a conductive  
7 film on said insulating substrate, a patterning operation on a  
8 conductive film so as to produce a desired shape in order to form  
9 said anode;

10               a process of putting said insulating substrate on which said  
11 anode has been formed into a vacuum apparatus and staking  
12 sequentially said organic layer and a first cathode contained in  
13 cathodes having a plurality of layers on said anode in a reduced  
14 pressure atmosphere;

15               a process of introducing oxygen gas in said vacuum apparatus  
16 which said reduced pressure atmosphere maintained and causing  
17 said oxygen gas to be brought into contact with said first cathode;

18               a process of stacking cathodes to be formed after a second  
19 cathode has been formed on said first cathode in said reduced  
20 pressure atmosphere to form said device main components; and

21               a process of encapsulating said device main components  
22 using said cap.

1        9.    The method for manufacturing the organic EL device  
2 according to claim 7, wherein a film thickness of said first  
3 cathode is 20nm to 100nm.

1        10.   The film manufacturing the organic EL device  
2 according to Claim 8, wherein a film thickness of said first

3 cathode is 20nm to 100nm.

1           11. The method for manufacturing the organic EL device  
2 according to claim 8, wherein said oxygen gas is introduced so  
3 that a partial pressure of oxygen in said vacuum apparatus is 2  
4  $x 10^{-4}$  to  $1 \times 10^{-1}$  pascals.

1           12. The method for manufacturing the organic EL device  
2 according to Claim 9, wherein said oxygen gas is introduced so  
3 that a partial pressure oxygen in said vacuum apparatus is 2 x  
4  $10^{-4}$  to  $1 \times 10^{-1}$  pascals.

1           13. The method for manufacturing the organic EL device  
2 according to Claim 10, wherein said oxygen gas is introduced so  
3 that a partial pressure oxygen in said vacuum apparatus is 2 x  
4  $10^{-4}$  to  $1 \times 10^{-1}$  pascals.

1           14. The method for manufacturing the organic EL device  
2 according to Claim 7, wherein a vacuum evaporation apparatus is  
3 used as said vacuum apparatus.